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REMARKS

Claims 12 to 25 were pending in this application. Claims 14 and 15 have been canceled, leaving claims 12, 13, and 16-25. For the reasons below, these claims are in condition for allowance.

Indefiniteness

The Examiner maintains that "coordinatively" in claim 20 is not a definite term. The question is whether one of skill would understand what is meant by the term. Evidence has already been submitted to show that the term is being used consistently with the art-accepted definitions of "coordinate bond" and "coordination compound," both being characterized by the sharing of a pair of electrons by two atoms in a chemical bond, wherein only one of the atoms donates the pair. Thus "bonded . . . coordinatively" in claim 20 encompasses compositions in which atoms of the recited nanoparticles are bound with one or more coordinate bonds to the recited polymers.

That one of skill would in any way not understand what is meant in claim 20 is belied by the common usage of "coordinatively" or the synonymous "coordinately" by those of skill who are familiar with coordination chemistry and organometallic compounds. For example, U.S. Patent 5,820,664, describes a metal coordination complex "including a metal, to which is coordinatively bound at least one ligand . . . ." See, e.g., col. 8, lines 50-52.

U.S. Patent 5,846,426 describes a "polynuclear metal oxyhydroxide or metal ion covalently or coordinatively bound to the support . . . ." See col. 4, lines 28-30. This usage in conjunction with the term "covalently" refutes any allegation that one of skill would have been confused by their use together in claim 20. U.S. Patent 5,786,030 claims in part coordination complexes having "a metal atom to which said oxygen atom . . . and said amino nitrogen atom or non-carbonyl oxygen atom . . . are coordinatively bonded . . . ." See col. 2, lines 39-42 and claim 1.

In view of the level of skill evident in these and many other references (U.S. 6,613,713 at col. 8, lines 20-25 ("attached . . . ionically, covalently or coordinatively"); U.S. 6,591,125 at col. 22, lines 31-33 ("the transition metal complexes of non-leachable redox polymers are typically covalently or coordinatively bound with the nitrogen-containing heterocycles . . ."); U.S. 6,613,794 at col. 10, lines 6-7 ("covalently or coordinatively bonded metals . . ."); and others cited in the Information Disclosure Statement filed with this amendment), the position that "coordinatively" as used in claim 20 is somehow indefinite should not be maintained.

Anticipation

Claims 12-14 and 16-22 were rejected as anticipated under Section 102(e) by U.S. 5,985,435 (Czaplicki). This rejection should not be maintained against remaining claims 12, 13, and 16-25.

With claims 14 and 15 now canceled, there is no ambiguity as to what is being claimed in claim 12 - paramagnetic or superparamagnetic nanoparticles. Applicants acknowledge that the recitation of certain ferromagnetic (claim 14) and ferrimagnetic (claim 15) materials was inconsistent with the requirement of paramagnetic or superparamagnetic nanoparticles in claim 12.

Czaplicki does not anticipate claim 12 or any that depend from it because it does not describe paramagnetic or superparamagnetic materials. Applicants agree that the properties of Czaplicki's iron oxides are inherent, but strongly dispute that they are paramagnetic or superparamagnetic. Rather, they are clearly ferromagnetic.

Ferromagnetic materials (and a subset thereof, ferrimagnetic materials) can be distinguished from paramagnetic or superparamagnetic materials by at least one significant feature - hystereis. See Anderson et al., Permeability and Hysteresis Measurement (CRC Press 1999). Hysteresis is responsible for the ability of ferromagnetic and ferrimagnetic materials to retain magnetism even after an applied field is removed. Paramagnetic and superparamagnetic materials do not retain magnetism upon removal of an applied field. See Dobson, Magnetism in Matter and Magnetic Biomaterials at 7, 10 (Keele Univ. 2000).

Czaplicki states that virtually any magnetizable particles are useful in the invention it describes. Col. 4, lines 44-46. Any ambiguity about whether this refers to ferromagnetic materials exclusively is dispelled by the further disclosure that the adhesive described must, after the particles are magnetized, "generate a field density of at least about 50 Gauss to be effective." Only ferromagnetic, and not paramagnetic or superparamagnetic, materials can satisfy this description, because only ferromagnetic materials are capable of retaining magnetism in the absence of the field applied in the magnetizing process. Therefore Czaplicki fails to describe the claimed paramagnetic or superparamagnetic nanoparticles and cannot anticipate the claims as amended.

Obviousness

The claims were rejected variously as obvious over Czaplicki in view of several other references. While those references were cited for limitations other than the recited paramagnetic or superparamagnetic nanoparticles, it is this element of the claims where the primary reference is deficient. The secondary references do not cure this deficiency in Czaplicki, so the rejections should not be maintained.

Claims 12, 14, and 15 were rejected as obvious over Czaplicki in view of U.S. 5,240,626 (Thakur). This rejection should not be maintained against claim 12 because Thakur describes magnetite particles, which are ferromagnetic. Therefore, neither Czaplicki nor Thakur

disclose or suggest the paramagnetic or superparamagnetic nanoparticles of claim 12.

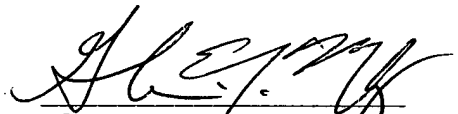
Claims 13 and 24-24 were rejected over Czaplicki in view of U.S. 4,176,054 (Kelley). Kelley does disclose the use of paramagnetic materials (col. 4, lines 58-61), but this feature cannot be combined with Czaplicki to find the present claims obvious. Reference teachings cannot be combined in a way that renders a reference inoperable for its intended purpose. M.P.E.P. § 2143.01. Czaplicki is directed to forming an adhesive having permanent magnetism due to the inclusion of a ferromagnetic material. Substituting the paramagnetic material of Kelley for the ferromagnetic materials in Czaplicki would produce an adhesive incapable of retaining magnetism in the absence of an applied field. Thus combining Kelly and Czaplicki in this manner would render Czaplicki inoperable for its stated purpose.

Claim 16 was rejected as obvious over Czaplicki in view of U.S. 4,254,201 (Sawai). Sawai describes toner compositions containing magnetic substances. It discloses only ferromagnetic materials (Fe_3O_4; magnetic iron), but even if it did describe paramagnetic materials, it would not be combinable with Czaplicki to reach the present invention. Again, substituting a paramagnetic material hypothetically disclosed in Sawai would render the adhesive of Czaplicki inoperable for its purpose.

CONCLUSION

Applicants respectfully request the entry of this Amendment and reconsideration of the claims. Applicants further ask for extension of the period for response to be extended three months to January 16, 2004 and authorize a charge to Deposit Account No. 01-1250 in the amount of $950 for the extension fee. Order No. 04-0009.01. Should any fees be due for entry and consideration of this Amendment that have not been accounted for, the Commissioner is authorized to charge them to Deposit Account No. 01-1250.

Respectfully submitted,



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